REMARKS/ARGUMENTS

Claims 1, 6, 9-11 and 13-34 stand non-finally rejected in the 5th outstanding Official Action in this application. Claims 1 and 13 have been amended and newly written claims 38-42 offered for consideration. Accordingly, claims 1, 6, 9-11, 13-34 and 38-42 are the only claims remaining in this application.

Applicant is entitled to compact prosecution of this patent application

The first Official Action on the merits in this application was mailed by the U.S. Patent and Trademark Office on February 9, 2006. Since that date, almost 2-½ years ago, an additional four Official Actions have been mailed by the Patent Office, only one of which was a Final Rejection. In response to the Final Rejection, a Notice of Appeal and a Pre-Appeal Brief Request for Review were filed and the Panel Decision on July 17, 2007 was to re-open prosecution. Since prosecution was re-opened, Applicant has received two non-final Official Actions, the first dated October 9, 2007 and the second most recently July 24, 2008.

It is also observed that each of the previous four Official Actions (12 pages, 16 pages, 16 pages and 13 pages) was significantly shorter than the fifth Official Action which is now a full 25 pages long. It is noted that in the fifth Official Action in the prosecution of this application, the Examiner raises for the first time the issues of obviousness-type double patenting rejections based upon Applicant's own prior art references (the Examiner previously raised this rejection when combining Applicant's own prior art with other prior art references).

It is submitted that the Examiner's habit of continually raising new issues and new grounds of rejection improperly delays the prosecution of this application to Applicant's

detriment. It is requested that the Examiner's supervisor carefully review any further Official Action from this Examiner.

Response to the merits

On page 2, section 3 of the Official Action, claims 1, 6, 9-11, 13-15, 17-25, 28 and 30-32 stand rejected under 35 USC §103(a) as unpatentable over Dyer (U.S. Patent 4,585,986) in view of Wilcox (U.S. Patent 5,847,554). In effect, the Examiner again alleges that the elements recited in Applicant's independent claims 1 and 13 are disclosed somewhere in the Dyer/Wilcox combination. The Examiner's previous and current admission that the Dyer reference fails to disclose Applicant's claimed "voltage sensor for producing a signal indicative of said DC supply voltage" and the claimed "switching signal generator, responsive to said DC supply voltage signal and said voltage demand signal, for generating said first and second switching signals" is very much appreciated. The Examiner's additional admission on page 14 that "Dyer, however, does not disclose generating signals with reference to an indication of the DC supply voltage" is very much appreciated.

The Examiner alleges that Wilcox teaches a "voltage sensing circuit 320 for sensing the voltage drop of the transistor" but this does not meet the claim limitations. Applicant's claim specifies a voltage sensor for producing a signal "indicative of said DC supply voltage." Even if Wilcox provided the voltage drop across the transistors, it is not sensed simultaneously and thus the DC Supply voltage is not sensed.

While, the Examiner suggests that this is somewhere disclosed in the Wilcox abstract, no such disclosure can be found. In fact, Wilcox never senses the input voltage and it can be seen

that the voltage drop across the two transistors 342 and 344 cannot be measured simultaneously and thus cannot be summed using some undisclosed circuitry in Wilcox to provide the V_{IN} voltage. In order to sense the voltage drop across transistors 342 and 344, at least one would have to be in its non-conducting state and the V_{IN} voltage measured as an input to amplifier 322, and this amplifier would have to measure the voltage drop. In the discussion of amplifier 322, there is no teaching that there is any voltage sensing.

The Examiner simply misunderstands what is disclosed in the V_{DS} sensing circuitry 320 and this is described in column 5, lines 27-60 of the Wilcox reference. When reviewing this portion of Wilcox, the Examiner will appreciate that MOSFETs 342 and 344 measure only the drain to source voltages and because **they are not both simultaneously in the non-conducting state**, the V_{IN} is never applied to the sensing circuitry 320 so that it could be measured. Rather, sensing circuit 320 measures the drain source voltages across the MOSFETs to provide an indication of the current being sensed, which is the whole point of the structure ("V_{DS} sensing circuitry 320 eliminates the need for a current sensing element and thus provides regulator 300 with the advantages of current-mode operation without the disadvantages of a current sense element, particularly additional dissipative losses and a more costly manufacturing process" (Wilcox column 5, lines 37-42)).

Accordingly, the Examiner's conclusion that Wilcox senses input voltage V_{IN} is simply a misinterpretation of the Wilcox disclosure and any further suggestion that Wilcox contains the claimed "voltage sensor" in claim 1 or the step of "generating" in claim 13 "with reference to an indication of the DC supply voltage" is respectfully traversed.

Accordingly, in view of the above, even if Dyer and Wilcox are combined, there is no disclosure of Applicant's claimed "voltage sensor" or "switching signal generator" as set out in independent claim 1 or the method step of "generating first and second switching signals with reference to the voltage demand signal and with reference to an indication of the DC supply voltage" in claim 13. Accordingly, independent claims 1 and 13, as well as claims dependent thereon, cannot be obvious in view of the Dyer/Wilcox combination.

Even if the Examiner had demonstrated where each of the claimed structures and claimed method steps in independent claims 1 and 13 were disclosed in the Dyer/Wilcox combination, that, by itself, is insufficient to establish a *prima facie* case of obviousness, because there must also be some reason or motivation to combine the references. The U.S. Supreme Court in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (April 2007), held that "[t]o facilitate review [of the Examiner's reason for combining references], this analysis should be made explicit." *Id.* at 1396. The Supreme Court went on to say that it followed the Court of Appeals for the Federal Circuit's advice that "rejections on obviousness grounds cannot be sustained by mere conclusory statements" (the Supreme Court quoting from the Court of Appeals for the Federal Circuit in *In re Kahn*, 78 USPQ2d 1329 (Fed. Cir. 2006)).

The Examiner has identified no explicit "analysis" which provides any reason or motivation for combining portions of the Dyer and Wilcox references. The Examiner's statement "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Dyer with the voltage sensor discussed by Wilcox, col. 5 lines 1-42" is simply a "conclusory statement" which is prohibited by the above-noted Federal Circuit case, as confirmed by the Supreme Court *KSR* decision.

Moreover, the Examiner's statement that "[t]he suggestion or motivation for doing so would have been to avoid dissipative losses in current sensing elements and costly manufacturing process" (reading from Wilcox at column 5, lines 37-42) evidences a clear misunderstanding of the cited prior art. A review of Wilcox will confirm that this suggestion is the reason for using the Wilcox V_{DS} sensing circuitry instead of a conventional "**current** sensing element" and has nothing to do with any voltage sensing. In quoting Wilcox, the Examiner does not cite the most applicable portion of the reference – the selective ignorance on the p[art of the Examiner is regretted as the entire quote reads:

> "V_{DS} sensing circuitry 320 eliminates the need for a **current sensing element** and thus provides regulator 300 with the advantages of **current-mode operation** without the disadvantages of a current sense element, particularly additional dissipative losses and a more costly manufacturing process." (emphasis added).

(Wilcox, column 5, lines 37-42).

Thus, the Examiner's misdescriptive recitation of what is taught in Wilcox does not rise to the level of any Supreme Court required "analysis" for supporting combining portions of Wilcox with Dyer.

Accordingly, because the Examiner fails to show both the disclosure of claimed elements and method steps in one of the combination of references and because the Examiner fails to provide the required explicit "analysis" of the motivation for picking and choosing elements, the Examiner clearly fails to establish a *prima facie* case of obviousness and any further rejection thereunder is respectfully traversed.

Finally, the Examiner fails to appreciate that the Dyer reference actually teaches a load (current) monitoring sensor and not a DC supply voltage sensor (as noted in the Supporting

Statement for the Pre-Appeal Brief Request for Review "Error #4"). As is well-settled law, the evidence of non-obviousness of the claims, particularly evidenced by a reference teaching away from the invention at hand, in the case of *In re Fine*, 5 USPQ2d 1596, 1599 (Fed. Cir. 1988), is strong evidence of non-obviousness of the claims and clearly rebuts any *prima facie* case of obviousness.

In the present instance, as noted in the Pre-Appeal Brief Request for Review, the Examiner fails to disclose how or where either of the Wilcox and Dyer references teaches the claimed "voltage sensor" or "switching signal generator" in claim 1 or the "generating" step in claim 13. This fact alone eliminates any applicability of these references in a rejection under §103. The fact that, as pointed out in Error #3 of the previously filed Pre-Appeal Brief Request for Review, the Examiner fails to identify any reason or motivation for combining references further confirms the inappropriate nature of the rejection and the absolute failure to set out a *prima facie* case of obviousness. Finally, the Examiner fails to appreciate that Dyer's teaching of a current sensor would lead one away from Applicant's claimed combination of elements and clearly rebuts any *prima facie* case of obviousness.

In view of the above, there is simply no basis for rejection of independent claims 1 and 13 or claims 6, 9-11, 17-25, 28 and 30-32 dependent thereon and therefore any further rejection is respectfully traversed.

On page 9, section 4 of the Official Action, claim 16 is rejected under 35 USC §103 as being unpatentable over Dyer in view of Wilcox in further view of Durif (U.S. Patent 6,504,698). Because claim 16 ultimately depends from claim 13, the above comments distinguishing claim 13 from the Dyer/Wilcox combination are herein incorporated by reference.

Again, it is noted that the Examiner does not allege that the Durif reference discloses Applicant's claim 13 "generating" step which is missing from Dyer/Wilcox. Therefore, even if Dyer, Wilcox and Durif were combined, they would not support a *prima facie* case of obviousness. Moreover, the Examiner merely provides a conclusory statement as to the reason for the combination of these references and fails to meet the Supreme Court requirement of an explicit "analysis." As a result, claim 16 is clearly patentable over the Dyer/Wilcox/Durif combination and any further rejection thereunder is respectfully traversed.

On page 9, section 5 of the Official Action, claims 26, 33 and 34 are rejected under 35 USC §103 as being unpatentable over Dyer in view of Wilcox in further view of Ramarathnam (U.S. Patent 6,316,895). Because claims 26, 33 and 34 ultimately depend from claim 13, the above comments distinguishing claim 13 from the Dyer/Wilcox combination are herein incorporated by reference.

It is noted that the Examiner does not allege that the Ramarathnam reference discloses Applicant's claim 13 "generating" step missing from Dyer/Wilcox. Therefore, even if Dyer, Wilcox and Ramarathnam were combined, they would not support a *prima facie* case of obviousness. Moreover, the Examiner merely provides a conclusory statement as to the combination of these references and fails to meet the Supreme Court requirement of an explicit "analysis." As a result, claims 26, 33 and 34 are clearly patentable over the Dyer/Wilcox/Ramarathnam combination and any further rejection thereunder is respectfully traversed.

On page 11, section 6 of the Official Action, claim 29 is rejected under 35 USC §103 as being unpatentable over Dyer in view of Wilcox in further view of Smedley (U.S. Patent

5,559,467). Because claim 29 ultimately depends from claim 13, the above comments distinguishing claim 13 from the Dyer/Wilcox combination are herein incorporated by reference.

It is noted that the Examiner does not allege that the Smedley reference discloses Applicant's claim 13 "generating" step missing from the Dyer/Wilcox combination. Therefore, even if Dyer, Wilcox and Smedley were combined, they would not support a *prima facie* case of obviousness. Moreover, the Examiner merely provides a conclusory statement as to the combination of these references and fails to meet the Supreme Court requirement of an explicit "analysis." As a result, claim 29 is clearly patentable over the Dyer/Wilcox/Smedley combination and any further rejection thereunder is respectfully traversed.

On page 11, section 7 of the Official Action, claims 1, 6, 9-11, 13-15, 17, 18, 20, 21, 23-25, 28 and 30-32 stand rejected under 35 USC §103 as being unpatentable over Dyer in view of Kern (U.S. Patent 6,081,104). This somewhat duplicative obviousness rejection is based upon the Dyer patent and therefore the above discussion relating to the defects in the Dyer reference are herein incorporated by reference. The Examiner's repeated confirmation that Dyer fails to disclose the claimed "voltage sensor" and the claimed "switching signal generator" in independent claim 1 (and presumably the "generating" step of claim 13) is very much appreciated.

While the Examiner suggests that the Kern reference discloses the missing features from independent claims 1 and 13 which the Examiner admits are absent from the Dyer reference, the Examiner ignores the major differences between the Dyer and Kern references. Kern does disclose a DC input voltage sensor, but Kern is directed to a DC-DC power converter for charging a battery. In Kern, the only reason for having a voltage sensor is to determine whether

or not power is available, e.g., in the case of a solar cell, whether or not it is daytime and the cell is capable of providing power, and whether the voltage available from the power source is sufficient for charging the battery.

The Examiner again provides a merely conclusory statement as a reason for combining these two references, i.e., that it would be obvious to one of ordinary skill in the art "to have modified the invention disclosed by Dyer to include the voltage sensor 58 to supply a signal indicative of the DC supply, for the purpose of obtaining a desired output based on the available supply (col. 7 lines 42-47)." What the Examiner forgets in his conclusory statement is that the Dyer circuit is driven by a relatively stable power source, i.e., battery 7, and one of ordinary skill in the art would not consider it necessary to add the complication of input voltage sensing to Dyer. There would simply be no apparent advantage in sensing the power supply voltage because Dyer obtains all the necessary control information from co-axial shunt 27. Thus, while it is possible that input voltage sensing could have been added to Dyer, there is no reason for one to do so especially as expressed by the Examiner on page 13, first paragraph, of the Official Action.

While the Examiner cites column 7, lines 42-47 in his purported rationale for combining references, it is unclear as to whether this is a reference to the Kern patent or the Dyer patent. Applicant presumes that although the paragraph discusses Dyer, it is in fact a reference to the Kern patent, which at column 7, lines 42-48, discusses monitoring "the output voltage from the power source 52" and then controlling the DC-to-DC converter 64 "such that a desired current output signal $C_{DC/DC}$ on the nodes 68, 70 is created." If in fact the Examiner is referencing the Kern reference, this is output voltage monitoring to create a desired **current** output signal. This

has nothing to do with a pulse width modulation switching circuit for controlling current to an inductor as required in independent claims 1 and 13. Again, the Examiner has failed to properly indicate an explicit "analysis" with respect to combining elements taken from the Dyer and Kern references.

On page 17, section 8 of the Official Action, claim 16 stands rejected under 35 USC §103 as unpatentable over Dyer in view of Kern in further view of Durif. Because claim 16 ultimately depends from claim 13, the above comments distinguishing claim 13 from the Dyer/Kern combination are herein incorporated by reference.

It is noted that the Examiner does not allege that the Durif reference discloses Applicant's claim 13 "generating" step missing from the Dyer/Kern combination. Therefore, even if Dyer, Kern and Durif were combined, they would not support a *prima facie* case of obviousness. Moreover, the Examiner merely provides a conclusory statement as to the combination of these references and fails to meet the Supreme Court requirement of an explicit "analysis." As a result, claim 16 is clearly patentable over the Dyer/Kern/Durif combination and any further rejection thereunder is respectfully traversed.

On page 18, section 9 of the Official Action, claims 26, 33 and 34 stand rejected under 35 USC §103 as unpatentable over Dyer in view of Kern in further view of Ramarathnam. Because claims 26, 33 and 34 ultimately depends from claim 13, the above comments distinguishing claim 13 from the Dyer/Kern combination are herein incorporated by reference.

It is noted that the Examiner does not allege that the Ramarathnam reference discloses Applicant's claim 13 "generating" step missing from the Dyer/Kern combination. Therefore, even if Dyer, Kern and Ramarathnam were combined, they would not support a *prima facie* case

of obviousness. Moreover, the Examiner merely provides a conclusory statement as to the combination of these references and fails to meet the Supreme Court requirement of an explicit "analysis." As a result, claims 26, 33 and 34 are clearly patentable over the Dyer/Kern/Ramarathnam combination and any further rejection thereunder is respectfully traversed.

On page 19, section 10 of the Official Action, claim 29 stands rejected under 35 USC §103 as unpatentable over Dyer in view of Kern in further view of Smedley. Because claim 29 ultimately depends from claim 13, the above comments distinguishing claim 13 from the Dyer/Kern combination are herein incorporated by reference.

It is noted that the Examiner does not allege that the Smedley reference discloses Applicant's claim 13 "generating" step missing from the Dyer/Kern combination. Therefore, even if Dyer, Kern and Smedley were combined, they would not support a *prima facie* case of obviousness. Moreover, the Examiner merely provides a conclusory statement as to the combination of these references and fails to meet the Supreme Court requirement of an explicit "analysis." As a result, claim 29 is clearly patentable over the Dyer/Kern/Smedley combination and any further rejection thereunder is respectfully traversed.

"Response to Arguments"

On page 20, section 11, the Examiner provides what he purports to be a "Response to Arguments" presented in Applicant's Amendment filed April 8, 2008. While the Examiner suggests that "Wilcox discloses a Vds sensing circuitry 320 for measuring the voltage drop of the transistors," this is not the requirement of Applicant's independent claims 1 and 13 which are at

issue. Rather, the claims specify that the "DC supply voltage" must be sensed, but there is no evidence in the Wilcox reference suggesting that there is any sensing of V_{IN} (the Wilcox supply voltage). As discussed earlier, Wilcox at column 5, lines 42-59 clearly teaches that the sensing circuitry 320 does not sense the input voltage, i.e., V_{IN} and instead sequentially senses V_{DS} across the two MOSFETs 342 and 344 to provide, at best, an indication of the current therethrough.

The second purported argument responded to is the "motivation for combining the two references." The Examiner cites three outdated decisions of the Court of Customs and Patent Appeals, the youngest of which is more than 30 years old. These cases do not reverse or rebut the *In re Fine* or *In re Rouffet* cases of the Court of Appeals for the Federal Circuit, both of which are previously of record. More importantly, these three cases do not reverse or overturn the more recently discussed decision of the U.S. Supreme Court in *KSR*, nor do they obviate the need for the Examiner to meet the Supreme Court's requirement of an explicit "analysis" as to motivation for combining references. Accordingly, the Examiner is simply ignoring the current legal requirement for establishing a *prima facie* case of obviousness. The Examiner's reliance upon old cases cited by the long-defunct Court of Customs and Patent Appeals is simply misplaced.

In the last paragraph under "Response to Arguments" beginning on page 21 of the Official Action, the Examiner alleges that "Error #5 in pre-Appeal brief dated 6/15/2007 is in Error." In fact, the Examiner is believed to be incorrect for a number of reasons. First, 35 USC §103(c) applies to any obviousness rejection and the Westcott '567 reference was combined with

the Dyer reference in rejecting the claims. Therefore, §103(c) clearly rebuts the Examiner's allegation of obviousness in view of the combination rejection.

Second, the double patenting rejections in the present Official Action in sections 13 and 14 are not based upon combinations of the Dyer reference with Applicant's own prior art references as in the previous Office Actions. These non-statutory obviousness-type double patenting rejection are based upon only the Wescott references by themselves and, accordingly, comprise a different basis for rejection from those in the previous Official Actions.

Newly implemented "double patenting" rejection

While the Examiner's previous Official Actions included (A) a **provisional** obviousness-type double patenting rejection based upon Application 10/500,639 (now issued as U.S. Patent 7,187,567) in view of the Dyer patent, i.e., a combination rejection (October 18, 2006), (B) a **non-provisional** double patenting rejection based upon U.S. Patent 7,187,567 combined with Dyer (again, a combination rejection) in the Final Rejection mailed March 15, 2007, (C) the double patenting rejections were abandoned in the Official Action mailed October 9, 2007, and (D) now the double patenting rejection has been reinstated in the current Official Action, but is now based upon either of Applicant's own prior art in U.S. Patent 7,187,567 or U.S. Patent 7,348,689.

The Examiner makes the unsupported allegation that claims 1 and 27 of the '567 patent disclose the limitations of present claims 1 and 13. However, "disclosure" is not the basis upon which a non-statutory obviousness-type double patenting rejection is based. Rather, the Manual of Patent Examining Procedure (MPEP) Section 804, clearly specifies that the only situation in

which a non-statutory obviousness-type double patenting rejection is appropriate is where the **claim** of the pending application (not the disclosure) overlaps and covers the subject matter covered in the issued patent claims (see the MPEP definition of "double patenting" in Section 804, i.e., "double patenting results when the right to exclude granted by a first patent is unjustly extended by the grant of a later issued patent or patents").

The Examiner seems to be of the opinion that, if there are similar structural limitations in the two sets of claims, they must somehow overlap, but this is clearly incorrect. Even if the limitations in the claims of the issued patent disclose the limitations in the present application, those limitations may not be combined or interrelated in the same manner. As a result, there is no guarantee that if the same structures are disclosed in two different patents, they must define the same invention.

The Examiner has clearly misunderstood his burden in applying this basis for rejection of Applicant's claims 1, 13-20 and 23-34 with respect to claims 1-28 in the '567 patent and claims 1-28 in the '689 patent. Again, it is noted that the burden is on the Examiner to establish that the claimed subject matter is the same, not merely that the cited two patents and the present application have the same inventor or relate to similar inventions.

Specifically, comparing independent claim 1 from the present application to claim 1 of the '567 patent, the patent claim 1 is a method of operating a bridge circuit, whereas the pending claim 1 recites a "pulse width modulation switching circuit." While the method of the '567 patent does apply a voltage to an electromagnet, there is no disclosure of the currently claimed "voltage sensor" or "switching signal generator" which is responsive to the DC supply voltage signal. Thus, the present application's pending independent claims 1 and 13 cover different

subject matter from that disclosed in independent claims 1 and 27 in the '567 patent and any further rejection based upon the ground of non-statutory obviousness-type double patenting is respectfully traversed.

Turning to the allegation of non-statutory obviousness-type double patenting of claims 1, 13-20 and 23-34 over claims 1-28 of the '689 patent, the Examiner provides no basis for the rejection of claim 1. The Examiner starts his analysis with claim 13. Thus, with respect to present claim 1, there is no support for the contention of non-statutory obviousness-type double patenting. With respect to present claim 13, the Examiner contends that claim 6 of the '689 patent discloses the claim 13 invention. It is noted that the '689 patent claim 6 does not appear to have any mention of current claim 13's step (a), i.e., "receiving a voltage demand signal." Instead, claim 6 in the '689 patent appears to be limited to switching signals which comprise "a single pulse of a determined width within the period, wherein the predetermined width does not fall below a minimum pulse width . . . ." There is no discussion of specific pulse widths contained in Applicant's pending claim 13. Accordingly, claim 6 of the '689 patent does not necessarily claim the same invention or an obvious variant thereof with respect to claim 13 of the pending application.

Accordingly, the Examiner has failed to meet the burden of establishing that the present application's claim 13 is in fact the same invention as the '689 patent or an obvious variant thereof. This burden of proof is on the Examiner and there is no burden placed upon the Applicant until the Examiner has established a *prima facie* case of obviousness-type double patenting rejection. The Examiner has failed to meet his burden and therefore there is no need to further respond to the otherwise unsupported allegation.

Applicant encloses herewith newly written claims 38-42 in which claims 38 and 39 are dependent from independent claim 13 and claim 40 is a newly written independent claim which is limited to a pulse width modulation controller for an electromagnet. Independent claim 40 is believed to clearly define over the cited prior art references of record for the reasons noted above, i.e., all structures recited in claim 40 are not indicated as being present in any claimed combination of references and there is no suggestion for combining those references in the manner of claim 40. Accordingly, entry and consideration of claims 38-42 is respectfully requested.

It should be understood by the Examiner that none of the Dyer, Wilcox, Kern or Durif references disclose the concept of switching within a pulse width modulation period between three voltage levels. Only the Dyer reference contemplates three-level switching using a bridge circuit, but Dyer has nothing to do with pulse width modulation. To the extent that Dyer provides voltage levels of appropriate polarity, they are only in successive time periods (see Dyer's Figure 3).

Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that claims 1, 6, 9-11, 13-34 and 38-42 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact applicant's undersigned representative.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____
Stanley C. Spooner
Reg. No. 27,393

SCS:kmm
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100